THE VETERINARY RECORD

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ACETYLENE FOR RINGWORM AND MANGE.

We have heard no further reports of the treatment of these diseases by acetylene gas, though it is now more than three months since Lieut. Stokoe described and recommended it. Some members must have tried it, on account of the rapid results claimed for it. We have very many remedies of proved efficacy against ringworm and mange, some of them very old ones; but all are more or less "tedious." This method is said to be simple and rapid, therefore it deserves a full trial—which many members have exceptional facilities for giving it. Also, the results of the trials should be made known; though it is perhaps too much to hope that many will be.

One of the best services which a clinician can render to the profession is to systematically test a method of treatment, and publish the summarized results when sufficient experience has been gained. That is, in fact, the special function of the clinician in therapeutic progress; but British veterinary surgeons have never been very ready to discharge it. With some diseases they have the excuse—not at all a satisfactory one, it is true—that a single practice scarcely yields sufficient experience to warrant recording. But with equine skin diseases most of our members in the forces—who number something like one-third of the profession—are seeing more cases now than they ever have, or ever will again. A great deal of work must be done in the army today in the way of testing methods of treating equine skin diseases, including comparative testing; and some of it at least ought to be reported.

MOTOR SPIRIT.

The request of the Secretary R.C.V.S. for full information on the use of motor spirit by members of the profession again appears in our advertise-columns. The desirability of this return should require neither explanation nor emphasis.

CONTAGIOUS ABORTION.

We note this week that another English County Council—Devon, is taking up immunization against contagious abortion. This is good news; for, the larger the number of districts in which immunization is practised, the sooner shall we be able to judge its worth. County Councils may do much good here by influencing farmers, and veterinary surgeons may help by influencing both farmers and members of County Councils. Personal influence in a matter like this may effect more than the official recommendation of the Board of Agriculture.

THE PATHOGENESIS OF MILK FEVER.

Paolo Zoppini, in 1912, published an article on this question (*La Clinica Veterinaria*). In his view, the theories which have been set up of late years, especially by Italian authors, and which regard toxic-bacterial influences as primary causes of the disease and hydraulic-mechanical effects as secondary causes, can no longer be maintained.

The author observed two cases in which tympany was present as a complication of milk fever. In both, the symptoms of milk fever disappeared spontaneously as the distension of the rumen increased, but promptly returned after the tympany had been removed by puncturing the rumen. Both cases were cured by the injection of air into the udder.

In three other cases, milk fever was successfully treated by the insufflation of air; but relapses appeared because the attendants, disregarding their instructions, freely milked out the air-distended udders immediately after the symptoms of milk fever disappeared. These three cases recovered again when the air-insufflation was repeated; and as the milking-out was then not begun till eight hours after the animals had risen, the recoveries were complete and permanent.

The author adds that, when he first practised air-insufflation, he had many unsatisfactory results. He attributes these to blowing in the air either in insufficient quantities, or too suddenly and under strong pressure. Afterwards, when he modified his procedure, and retained the air in the udder for from ten to fifteen minutes by binding the teats, he always obtained satisfactory results.

The author thinks that the surprising alternation of recoveries and relapses within scarcely more than one or two hours seen in the above cases is difficult to reconcile with the theory of toxic or bacterial effects. The cause of milk fever is to be sought much more in disturbances in the equilibrium of the circulation or of the blood pressure, to which the setting in of lactation and the flowing away of the blood which has become unnecessary to the retrogressing uterus act as predisposing causes. If the latter process goes on gradually, with a uniform distribution of blood to all the organs of the body, the alterations of blood pressure adjust themselves to equilibrium. In some cases, as in cows which are good milkers and need very great quantities of blood in the udder, this gradual and equable distribution of blood to the organs is not attained. Then, in the more remote organs, and especially in the brain, a fall of blood pressure occurs as a result of the diminished blood supply

This, when it has reached a certain stage, produces the well-known symptoms of milk fever.

In the cases described above by the author, spontaneous recovery had been brought about by the enormous pressure which the gases in the rumen exercised upon the abdominal vessels, and especially upon the uterine vessels, driving the blood contained in them to all parts of the body, including the brain. The same thing takes place during successful treatment by air-insufflation, in which, however, care should be taken that the air pressure in the udder is produced slowly, is strong enough, and is maintained for a considerable time.—(*Berliner Tier Woch*).

Spasm of the Œsophagus in a Horse.

Barton records the case of a horse which, before undergoing an operation, was given 20 grammes of sulphonal in 100 grammes of bran, and then thrown (*Rev. Vet. Milit.*) During the operation the animal was very restless; and it was necessary to employ great force in order to control the head and neck. The horse was got up and taken into his box, where he commenced to eat hay. At the first mouthfuls, however, he suddenly stopped masticating, the expression became extremely anxious, and the limbs were held rigid. The head was held very high; and the neck, which was considerably extended, underwent spasmodic jerky movements which were afterwards communicated to the whole body, and were accompanied by groaning sounds. These spasms were followed by abundant bilateral nasal discharge of a greyish-white viscous material of salivary appearance, which was succeeded by an inodorous mucus, greenish in colour on account of the portions of masticated hay which it contained.

During three-quarters of an hour these attacks were repeated a dozen times, with progressively decreasing intensity. Each time the material discharged was less abundant and more clear; and in the last attacks the discharge consisted of pure saliva.

Some hours afterwards the only symptom that remained was a slight dulness, and no points of tenderness could be found. Three days later, a myositis of the cervical region became clearly manifest.—(*Revista de Veterinaria Militar*).

[Spasm of the œsophagus is rare in animals. It has been seen in horses after the injection of morphia and after chloral hydrate or chloroform narcosis, but not, so far as I know, after the administration of sulphonal. The present case seems rather to have originated in injury by the force used to control the head and neck.—*Transl.*]

Auscultation of the Pregnant Uterus.

Some years ago Prof. Albrecht published some researches upon this subject (*Munch. Tier. Woch.*) His experiments went to confirm the results previously arrived at by Dennhardt and also by Zieger. He attempted to discover whether the uterine sounds in pregnant cows, goats, and sheep are to be heard by means of a stethoscope introduced into the vagina; and his results were always positive. The stethoscope he used for cows was 50 centimetres long, and 8 centimetres thick; and that used for small ruminants was 27 centimetres long and four centimetres thick. The instrument consisted of a metal tube with a thin rubber membrane at one end, and a funnel for applying to the ear.

The stethoscope, and the vulva and its vicinity, were washed and disinfected before the instrument was introduced. The lips of the vulva were drawn apart by an assistant. The stethoscope was then slowly passed to the portio vaginalis uteri, and its anterior end was applied to different places of the oral division of the vagina.

In those cases in which Albrecht heard the uterine sounds very distinctly on one side of the animal, and indistinctly or not at all on the other side, the fœtus lay on the side of the clear sounds.

Albrecht suggests that perhaps a newly constructed stethoscope, after the pattern of a phonendoscope, might render it possible to demonstrate pregnancy at an early stage. Perhaps it might also be possible, especially in small animals, to demonstrate the uterine sounds by auscultating the abdominal wall with an appropriate instrument.—(*Berliner Tier. Woch.*)

Epileptiform attacks in Equine Pasteurellosis.

Fontaine records these observations (*Rev. Vet. Milit.*) In seven cases of equine pasteurellosis, he has seen transient nervous symptoms in the form of epileptiform crises. These appeared at the period when the disease was declining, and in horses which were severely affected. All the horses recovered.

The attacks came on between the tenth and twelfth day of the illness, in the following manner. At first the horse appeared somnolent, and rested the body-weight upon the fore limbs. After a few minutes, he fell to the ground. All the muscles became contracted, the limbs were held rigid, the respiration was accelerated, and the membrana nictitans almost covered the eyeball. The attack lasted a few seconds, or rarely a minute; and, when it terminated, the horse neighed plaintively. Within twenty minutes, the animal recovered its normal condition. These attacks, which were undoubtedly of toxic origin, were repeated frequently.—(*Revista de Veterinaria Militar.*)

W. R. C.

Annual Report of the Camel Specialist, Punjab, 1915. H. E. Cross.

In connection with the question as to whether other animals are susceptible to camel surra only a small number of experiments could be carried out, on account of pressure of other work. The results appeared to indicate that dogs are susceptible, but goats insusceptible. One experiment was carried out in which the camel strain was passed through a pony and then again inoculated into a camel. This single result appeared to indicate that passage through a pony attenuates the virus for the camel.

Treatment. Sixty-eight animals were treated by the "arsenic alone" method or by the "arsenic and

soamin" method. Of these 54 were reported as cured and 14 died.

Experiments in the treatment of the disease have been or are being carried out. Iodine, carbolic acid, sodium bicarbonate, potassium permanganate and borax have been tried, but no good results have been obtained with any of them.

With a view to protecting camels from the bites of blood-sucking flies a number of investigations were made into the properties possessed by various substances for this purpose.

The conclusion arrived at was that the only emulsion that was of any use was one of chirpine oil in the proportion of 20 to 40 ounces to a gallon of water. The amount sprayed on each camel should be about four pints. Even this emulsion was not of any great value from a practical point of view as it was efficient for only about three hours. If the emulsion was made with 80 ounces of the oil to two gallons it was found that blistering of the skin resulted.

Inspection of castrated camels indicated that those castrated at seven years and upwards were much better animals than those operated upon earlier.

Experiments showed that the best purgative for camels is magnesium sulphate, the dose being from 1½ to 2 pounds. Next in order with the doses are: Kamala, 8 ozs.; croton oil, 3½ drachms; aloes, 3½ ozs. of solution; gamboge, 3 ozs.; and linseed oil, 4 pints. Two grain doses of eserine and pilocarpine given subcutaneously give satisfactory results.—*Tropical Veterinary Bulletin.*

Importance of 24-hour Temperature Record in Tuberculin Test in Cattle.

The following passages occur in a series of investigations on Clinical Thermometry, by G. Sims Woodhead, Professor of Pathology, Cambridge, and P. C. Varrier-Jones, from the Pathological Dept., Univ. of Cambridge, under the sub-head of "Value of Quasi-continuous temperature record method in Study of Tuberculosis." The series were published in *The Lancet*, between Jan. 22 and March 4.

"In the *Journal of Comparative Pathology and Therapeutics*, 1915, vol. xxviii., p. 337, et seq., we have insisted upon the importance of obtaining a continuous temperature record when carrying out the tuberculin test in cattle, and have given a full account of the details to be attended to in making such a test. Here it must suffice to give a record of the action of a full diagnostic dose of tuberculin upon healthy and tuberculous cattle. It is evident that in the healthy cow the rise of temperature following the administration of a full dose is very slight, that the rise appears at the next milking, feeding and watering period, between five and six hours after the injection, that it lasts for a short time only, and that at no time does it exceed 0.2° F., beyond the temperature recorded the preceding day. There was no repetition of the rise on the succeeding day at the corresponding hour, the temperature remain-normal. A calf similarly treated gave similar results. Tuberculin in full diagnostic doses, then, exerts but a very slight and transient effect upon healthy bovines of whatever age.

Reaction in Tuberculous Animals.

The temperature curve of a tuberculous animal to which a similar dose of tuberculin is administered is, however, as in the human subject, absolutely characteristic. In order to demonstrate this as clearly and conclusively as possible, we first tested the tuberculin reaction of a calf that had been rendered tuberculous for experimental purposes. After a 24-hour temperature record had been obtained, 6 c.c. of tuberculin was injected subcutaneously, and during the succeeding 48 hours a continuous temperature record was made. We have first the pretuberculin temperature record, then that after the injection of tuberculin at 10 a.m.—a most characteristic tuberculin curve. Immediately after the injection of the tuberculin comes a rapid rise—1.2° F.—beyond the temperature recorded at the corresponding hour, noon, the previous day—*i.e.*, there is within a couple of hours a considerable interval—1.2°, between the normal and tuberculin curves. An hour and a half later the difference between the corresponding time points on the two curves is only 0.8°. At 9.30 p.m., 11½ hours after the injection of the test dose, the temperature has reached 105.3°, and the difference between the normal and the tuberculin temperatures is 2.8°. Then, although the temperature of the tuberculinised calf falls to 105° during the next half hour—*i.e.*, just 12 hours after injection—the difference between the pre- and the post-tuberculin temperatures has risen to 2.9°. From this point onwards the tuberculin temperature curve assumes a very interesting form. In a very definite, though not regular, falling line we have until 6.30 a.m. a series of upward peaks or teeth. Then for an hour it remains almost stationary; but after this there is a further fall of 0.2°, due apparently to the ingestion of food the temperature of which is below that of the body. From 8.30 to 9.30 a.m. there is a rise of 0.6°, but immediately following the watering of the animal there is a fall of 1.4°, this indicating a very marked instability of the temperature, even 24 hours after the exhibition of the tuberculin.

In view of this continued instability it was decided to continue the record for a second 24-hour period. It was then found that even at the end of that period, the unstable condition continued. Further, the temperature was not only unstable, it remained at a markedly higher level than that attained in the pre-tuberculin period. It is a feature of special interest that not only was the mean temperature higher than normal even in the second 24 hours of the post-tuberlin period, but the variations were far more marked than in any period and under any conditions in which the animal was placed in the pre-tuberculin 24-hour period. The temperature was in a state of unstable equilibrium, was easily and profoundly affected by any of the factors that ordinarily set up far less marked, though, as above noted, distinct variations.

So marked is this feature that in the paper previously referred to we "insist that evidence of a tuberculin reaction is to be sought, not in the number of degrees recorded, or even in the difference in temperature at single intervals in the pre- and post-tuberculin periods [important though these undoubtedly are], but in the nature of the two curves as a whole, and when studied together. To begin with, far more marked fluctuations, especially as the result of exercise and of watering, are met with in the post- than in the pre-tuberculin period; whilst a feature that distinguishes most markedly the tuberculin temperature curve in a tuberculous animal from that in a 'normal' animal is the distinct, though 'intermittently continuous' rise, and the equally 'intermittently continuous' fall."

What Constitutes a Positive Reaction?

"Having obtained such marked and characteristic reactions in the tuberculous calf, and in order to submit our provisional conclusions to a practical test, we determined to experiment on an adult animal, a cow, that we looked upon as being tuberculous (it had some

months previously been injected with a full dose of tuberculin and the temperature had been taken at four-hour intervals with a mercury clinical thermometer). Some doubt, however, existed as to the accuracy of the diagnosis, and we certainly had no information as to how the animal was supposed to have contracted the disease. A couple of 24-hour records were obtained before the tuberculin was injected, and the curves were practically identical, only the normal variation appearing in each. At 3 p.m. a full dose of 6 c.c. of tuberculin was again given. Three hours later the temperature began to rise in the characteristic 'wavy' or 'toothed' fashion, reaching a maximum—103° F.—six hours after the injection. Although there followed a slight fall, a kind of plateau line was maintained, but with small remissions, until 2.30 a.m. Though remaining high for a night temperature, it then fell into a series of diminishing waves until at noon it had reached its normal level and there continued.

Were we to consider this a 'positive tuberculin reaction'?

It is usually accepted that a reaction should be considered positive if there is a rise of temperature of 1.6° F. above the maximum of the two preceding days—*i.e.*, we adopt a relative standard. All these observations accord well with what we have observed in the human tuberculous subject, in whom even very small doses of tuberculin produce very great instability of temperature. So noticeable is this, indeed, that we feel justified in accepting this feature, along with the steadily rising and then falling curve, as constituting even more important diagnostic factors than the actual rise of temperature at any one point.

Injections of tuberculin into normal bovine animals are followed by a rise of 0.8° C. (1.4° F.) or more in only 12 per cent. of the cases so treated. A rise of 0.9° C. (1.62° F.) or more was recorded in five cases only, or 4 per cent. of a whole series. Applying these figures to the test now under consideration, we should be compelled to admit that at the end of the first four hours there is no appreciable reaction, and that for the next 10 hours there are only five half-hour periods in which there is a distinct tuberculin temperature reaction. One occurs at 10.30 p.m., 7½ hours after injection, and would be missed in any series of four-hourly observations, and four between 12.30 a.m. to 4.30 a.m., again half an hour before the third four-hourly period usually allotted to the taking of the temperature. When, however, we come to study the complete record, and note the difference between the highest temperature reached and the temperature at the corresponding time of the previous day, we may well be satisfied that the reaction is "positive"—*i.e.*, in the normal and tuberculin diurnal curves the difference in temperature at the corresponding points on the curves exceeds the amount set up by the members of the Royal Commission on Tuberculosis as the standard for a positive reaction, especially as it is evident that this excessive difference really extends over several hours, and we must come to the conclusion that the cow was tuberculous.

The Normal Diurnal Variation.

This brings us to the question, How far must the normal diurnal variation be taken into consideration when interpreting the 'tuberculin temperature' in fixing a standard for a 'positive' tuberculin test?

In the first place it is evident that the normal diurnal variation may not be without effect upon the tuberculin temperature, and this being the case the time at which the tuberculin is injected cannot be considered to be a matter of indifference when we are called upon to determine whether we have a positive reaction or not. The conclusions at which we have arrived as a result of our observations incline us to agree with Cobbett and S. Griffith,* that the test injection may be so timed that the maximum rise of temperature caused by the tuberculin will coincide with the maximum rise due to the normal diurnal variation. In such a case we should, of course, expect a greater total rise of temperature than when the upward movement caused by the tuberculin is neutralised by one or more of the several causes of the diurnal downward variation. Bearing this in mind, we are bound to recognise that it may be necessary for us to revise our interpretations of these temperature records, especially in 'doubtful' reactions It may not be, and probably is not, sufficient to rely on the chance of obtaining the difference between the maximum temperature for the 24 hours preceding the injection of tuberculin and that of the succeeding 24 hours.

The temperature at each period would have to be compared with those taken at the corresponding periods during the 24 hours after injection—*i.e.*, the highest temperature obtained after injection would have to be compared with the temperature attained at the corresponding time in the preceding 24 hours, a comparison impossible of attainment without having access to continuous or quasi-continuous records; for although it is known that the maximum temperature after an injection of tuberculin is usually attained between the sixth and twelfth hours, important exceptions to this rule are often met with; and it is obviously out of the question with an ordinary clinical thermometer, even when the temperature is taken at four-hourly intervals, to be sure of 'catching' the temperature at its maximum. And even were this attainable, it would still be impossible to determine the point of time in the preceding 24 hours with which to make a comparison. Indeed, from a study of any of our charts it is evident that, using the four-hourly method of taking temperatures with the ordinary clinical thermometer, it is not difficult, nay, it is a very easy matter, for the observer to miss a rapid rise or fall—a rise or fall which occurs time after time in every temperature curve yet obtained by us in carrying on our tuberculin experiments."

Under the heading of "Conclusion," the authors say:—

"We recognise that in the rough and very imperfect sketch of the history of thermometric methods, and the scanty matter we have used to illustrate the value of the quasi-continuous temperature record, we have left much room for criticism and improvement. Our object, however, was, after giving a short résumé of the history of the clinical thermometer in its various forms, to indicate the value of these continuous records in the study of the temperature phenomena that are already considered to be of importance, as indications of the presence of various disease processes. This we considered would be best done by giving a series of charts from normal individuals, from tuberculous patients, human and bovine, suffering from uncomplicated tuberculosis, and from tuberculosis combined with septic mischief, from tuberculosis from which the natural absorption of tuberculin has been induced, and from tuberculosis in which a tuberculin reaction from artificial injection of tuberculin has been set up. Our interpretations may be erroneous, but the records are there to be studied by those who are interested and whose experience and knowledge will enable them to give opinions of value.

In the course of our work we have become convinced that there is still much to be learned from a close study of continuous thermometric records taken from cases suffering from diseases of which the clinical symptom-complexes are similar, but of which there are now and again, slight, or in some cases even marked differences.

* L. Cobbett and A. Stanley Griffith: Royal Commission on Tuberculosis, Final Report, Part II., Appendix. Supplemental Volume. Report on Tuberculin Tests, London, 1913, p. 13.

ON THE MOVEMENTS OF THE ISOLATED SMALL INTESTINE AND THE ACTION OF VARIOUS DRUGS AND EXTRACTS UPON THEM.

The gut of the cat was found most suitable. Pieces of a certain length were placed in a modified Ringer's fluid and the movements recorded. The method employed for these isolated pieces of intestine was a modification of that of Magnus. Carbon dioxide has an inhibitory action on both the tone and movements of the intestine. If the action of CO_2 is prolonged the intestine is permanently injured and eventually killed. Hyoscyamine has a stimulating action; it can initiate the movements when they are absent. The pendulum movements are increased in size and made more regular, the tonus oscillations being partially or completely abolished. Stimulation is seen with 0.001 per cent. of concentration. Hyoscine has an action similar to that of hyoscymine, but it is weaker, 0.02 per cent. being the weakest concentration having a distinct action. Both drugs inhibit the stimulation produced by pilocarpine. Cocaine has a stimulating action in strength from 0.001 per cent. to 0.01 per cent.; with higher concentration no stimulation is seen, but a marked regularising effect then appears; with 0.2 per cent. a paralysing of the intestine comes on. Inhibition of the action of pilocarpine does not occur. Choline produces a marked rise of tone in the isolated intestine; this occurs with a concentration of 1 in 50,000; with high concentration the pendulum movements are obliterated. Atropine inhibits the action. There is also mutual antagonism between the actions of choline and adrenalin. Neurine in its action resembles choline, but it is more powerful; 1 in 100,000 produces an effect. Watery extract of the posterior lobe of the pituitary body has the effect of raising the tone and causing the development of large tonus oscillations. The action occurs only with high concentrations; thus two glands per 100 c.c. of Ringer's solution is the weakest extract to give definite results. Alcoholic extract has no action. Hemisine causes inhibition of the movements and lowering of the tone of the intestine; 1 in 10,000,000 produces a small but distinct effect. Extracts of spleen, thyroid and thymus, pancreas, liver, kidney, and brain give no definite results. Stomach contents inhibit the movements by their acidity alone. The contents of the small intestine have often a marked stimulating effect apart from, but to a considerable degree influenced by, their reaction. Extract of digesting gastric mucous membrane and of mucous membrane of small intestine, and also secretin, have, when neutralised, no definite action. Pancreatic secretion increases the tone. Indol inhibits the movements and lowers the tone. Bile has a similar action. A number of other substances were studied.—ALEXANDER WAUGH YOUNG, in *Quarterly Journal of Experimental Physiology.*

On the Applications of Eusol.

The following concludes the Report to the Medical Research Committee. The Report is signed on behalf of the Edinburgh Committee by the chairman, Major James Hodsdon, President of the Royal College of Surgeons of Edinburgh.

Details are given of a number of cases grouped under seven headings, and the report continues:—

"Further clinical experience of eusol in a great variety of cases has proved it to be a non-toxic, non-irritating, and efficient antiseptic. Nothing in this experience has been more striking than the fact that while it is highly destructive to bacteria, it is non-toxic to the tissues. In eusol free hypochlorous acid is the most essential ingredient, but there is present also a sufficient quantity of biborate of calcium to give the solution a reaction alkaline to litmus. This feebly alkaline solution can be introduced into wounds or serous cavities with perfect safety. It can even be left in such cavities in quantity without any harmful effect. In lacerated and contused wounds, and in compound fractures, such as are met with in military practice, it is the most efficient antiseptic we possess.

It is most efficacious during the period of what might be termed progressive sepsis. Some surgeons have emphasised the benefit of modifying the treatment when sepsis is subsiding or has ceased. The granulations form after a period of two to three days, and rapidly cover the surface of the wound. Any tendency to superabundant growth of granulations and consequent delay in healing can be counteracted either by so applying the eusol that the serous discharge is reduced to a minimum and the wound is kept dry, or by discontinuing eusol and using other dressings appropriate for healing wounds. In any event the sepsis is by this stage completely under control.

The freedom which can be exercised in the application of eusol, and the rapid action which it has in arresting the sepsis and discharge of an infected wound, led to experiments on the effect of eusol on the blood. Following on this eusol was employed in the treatment of general septic toxæmia by intravenous injection.

This method was first made use of by Lorrain Smith, Ritchie and Rettie, in a case of grave puerperal septicæmia, and the result was the recovery of the patient. They have applied the treatment in other similar conditions. In several cases toxæmia has been successfully overcome, and although such a result has not been uniformly attained, the safety of the method justifies its being applied in the diseases referred to in their preliminary communication. Intravenous injection has also been applied with success by Captain Fraser and Captain Bates in cases of acute toxæmia secondary to gas gangrene.

Further research is now being carried out on the development of the subject foreshadowed by these investigations.

Some practical considerations remain. Hypochlorous acid is an extremely active bleaching agent, and it should therefore not be brought into contact with coloured fabrics. Further, if cloth is kept in the solution for some time its fibres are made brittle from destruction of the texture. Any towels, etc., which become wetted by the lotion should be forthwith rinsed in a large quantity of water to remove the acid as rapidly as may be. It also is corrosive to metals; instruments, needles, etc., should be carefully treated, else they will rust.

The lotion is exceedingly inexpensive. The ingredients are procurable everywhere at a slight cost, and the preparation is a very simple process. At the present time especially it will be found that the introduction of eusol will effect economy in the outlay for the treatment of septic wounds, a point of considerable importance, since phenol and its derivatives are becoming increasing difficult to procure.

Finally, it may be useful to set forth the details for preparing the antiseptic. Eupad powder is composed of equal weights of boric acid and bleaching powder. The boric acid is in sufficient excess to set free the hypochlorous acid in the solution. The bleaching powder should be dry and should contain 28 to 30 per cent. available chlorine.

The solution eusol is prepared as follows: Add to 1 litre of water 25 grammes of the powder; shake well and allow it to stand an hour; then filter. The clear solution is eusol, and contains about 0·5 per cent. hydrochlorous acid. If the bleaching powder is old or not up to the strength given above, use a larger quantity of the powder.

A rough-and-ready method of preparation is to add ½ oz. of the mixed powder to 1 pint of water; stir or shake and allow the sediment to settle.

In cold weather the solution will keep its strength for three weeks; in hot summer weather it loses its strength more rapidly, and should not be kept more than one week. It keeps best in bottles of coloured glass in a dark cupboard.

For use as a lotion the solution must be warmed. This may be done by placing the bottle in a basin of hot water, or the solution may be made double strength (50 grammes to the litre) and diluted with an equal volume of hot water. The double-strength solution will not keep its value for more than two days."

The White Man in the Tropics.

Although there are many who still deny that the white man can ever establish himself permanently in the tropics, Sir Patrick Manson believes that successful colonization in hot climates is a matter of acquisition of knowledge as to the conditions of healthy life and of the practical application of that knowledge. The problem is largely one of the discovery of efficient means of protection against the many microscopic enemies which almost seem to resent the invasion of the tropics by the white man. The poisons injected by these organisms vary in their nature and composition, but to all of them in general may be applied almost literally the description of the "leperous distilment" poured into the ears of Hamlet's father:

> whose effect
> Holds such an enmity with blood of man,
> That swift as quicksilver it courses through
> The natural gates and alleys of the body,
> And with a sudden vigour it doth posset
> And curd, like eager droppings into milk,
> The thin and wholesome blood.

Less than a quarter of a century ago no systematic attempt was made to fight these scourges, and men went to the tropics in a fatalistic spirit that led them to gamble their lives againgst the too likely chance of disease and death. Now all this is changed, and many vigorous campaigns are being conducted for the sanitary reclamation of the tropics. Already much has been done, notably in the prevention of malaria, a disease which has made waste some of the fairest and most fertile parts of the earth, and which has caused the ruin of flourishing states. Of its devastating effects the most terrible example is seen in the decay of ancient Greece. We need only recall here the chief triumphs of modern science in the domain of tropical medicine. The most conspicuous of these has been the banishment of yellow fever from Havana, and the sanitary cleansing of Panama where yellow fever, malaria, dysentery, and other diseases had defeated the enterprise and skill of the French engineers, who would doubtless, but for these scourges, have succeeded in making a canal through the isthmus. The French effort was baffled by the conditions which at that time made the Panama zone a most active breeding ground of the germs of tropical disease. That the Americans succeeded where the French failed is due to the progress of medical science and the application of the knowledge gained by research.

In an address delivered by General William C. Gorgas, a man who combines in a rare degree scientific resourcefulness with the power of organising victory as a leader of men, which appeared in the *Boston Medical and Surgical Journal* of August 5th, 1915, he says:—

"The real scope of tropical sanitation, which has been almost entirely developed within the last fifteen or twenty years, I believe will extend far beyond our work at Panama. Everywhere in the tropics, to which the United States has gone in the past fifteen years, it has been shown that the white man can live and exist in good health. This has occurred in the Philippines, in Cuba, and in Panama, but the demonstration has been most prominent and spectacular at Panama, and therefore has attracted there the greatest world-wide attention. Here among our large force of labourers we had for ten years some ten thousand Americans—men, women, and children. Most of these American men did hard manual labour, exposed to the sun, rain and weather conditions day in and day out, yet during that time their health remained perfectly good, just as good as if they were working at home. The same remark as to health would apply to the four thousand women and children who lived at Panama with their husbands and fathers. Both the women and children remained in as good condition as they would have been had they lived in the United States. This condition at Panama, I think, will be generally received as a demonstration that the white man can live and thrive in the tropics. The amount of wealth which can be produced in the tropics for a given amount of labour is so much larger than that which can be produced in the temperate zone by the same amount of labour that the attraction for the white man to emigrate to the tropics will be very great, when it is appreciated that he can be made safe as to his health conditions at a small expense. When the great valleys of the Amazon and of the Congo are occupied by a white population more food will be produced in these regions than is now produced in all the rest of the inhabited world."

[British East Africa is on the equator. Egypt and India are between 10° and 20° N. Lat: and all Northern Australia, and S. Africa north of Cape Colony, between 10° and 30° S. Lat.].

A Treatment of Pellagra.

Pellagra is a disease which, so far, appears to have little direct interest to the veterinarian, although the more prominent theories concerning its etiology point te a dietetic origin. The suggestion of Dr. Sambon that it is carried by the simulidæ lacks confirmation. But the problem has proved so elusive that it must possess interest to every student of medicine, human or veterinary.

"In 1914, Dr. G. Alessandrini and Dr. A. Scala published an account of their researches which showed that silica in a colloidal state produced in various animals an intoxication in which the clinical picture and pathological lesions corresponded completely to those of pellagra.* They, moreover, demonstrated that by causing monkeys to drink the opalescent water of pellagrous districts, which is also drunk by the inhabitants, a similar intoxication results. They came to the conclusion that the cause of this disease was the silica, and probably also the silicates, existing in the drinking water in a state of solution or colloidal suspension. They added, however, that not all water which contained silica will cause this intoxication, since the silica is capable of forming, like the colloids, unstable combinations with the electrolytes, and these combinations may be innocuous. They said, further, that carbonate of calcium and the alkaline carbonates prevent the toxicity of the silica.

Dr. Alessandrini and Dr. Scala now state in a further communication (*Il Policlinico*, Practical Section, Jan. 16th, 1916), that it is not sufficient to assert that their conclusions do not merit consideration simply because the cause of pellagra is incontrovertibly connected with the consumption of maize, every part of which has been minutely analysed and experimented upon, without giving the clear, striking, and broad results obtained by them in their experiments. Neither is it a valid objection which has been put forward by

* New theories and investigations concerning Pellagra. *V.R. (ex Lancet)*, May 22, 1915, p. 297.

Sandwith that in Egypt, where pellagra is also found, there are no areas of silica, for the reason that the water of these localities has not been examined, and that it has never been denied that argillous strata exist in which the water lies which afterwards forms into springs and from which they may be contaminated. Besides, it is incredible to them that a desert soil like that of Egypt should be wanting in silica.

In their former communication Dr. Alessandrini and Dr. Scala referred to ten cases of pellagra cured by intramuscular injections of sodic citrate, 1 c.c. of an aqueous solution of 10 per cent., leaving the patients in their original surroundings, at their ordinary occupation, and on their usual scanty diet. They have now collected a further number of cases from various parts of Italy in the same manner. In 44 out of 50 thus treated excellent results were obtained, especially when it is noted that there was no other factor to cast doubt on the curative effect of the remedy. Of the remaining six cases, in three a marked improvement in the general condition was observed, although the cutaneous manifestations were but slightly improved. Of the other three, only one could be said to give an entirely negative result, and in this chronic articular rheumatism and endocarditis existed, while another was of advanced age and was subjected to a limited number only of injections.

The observers express the hope that extended trials will be given to this treatment, believing that, if the theory of the cause of pellagra is not recognised as proved, the benefit of the method will be more largely taken advantage of. Then, where possible, the drinking water of pellagrous districts will be purified.—*The Lancet.*

Goods sold and not accepted—Duty of seller.

At the Holbeach County Court, Edmund Hebble-white Todkill, of Sutton Bridge, sued Thomas Church, of Peterborough, for £9 13s. 6d. for apples and plums sold and delivered last September, and for £6 for damages for defendant's failure to accept certain apples sold to him by plaintiff. After evidence had been heard;

Judge Mulligan pointed out that an account for apples and plums sold, for which the £9 13s. 6d. was charged, was duly delivered to defendant, and that he subsequently wrote promising to send cheque. It was, therefore, clear that the £9 13s. 6d. was due, and he gave judgment for plaintiff on that item. With regard to the claim for damage it was the duty of a seller not to allow goods sold but not accepted by the buyer, to waste. The plaintiff should have given the defendant notice to accept delivery, and if the apples were not taken within a reasonable time, he should have resold and obtained what he could for them. At the present time particularly this course must be adopted to save any waste of the food supply of the nation. He found from plaintiff's evidence that he could have resold for £1 10s., but plaintiff would have had to pay for picking, 7s. 6d. He, therefore, gave judgment for the plaintiff on the item of £6 for £4 17s. 6d., being the amount of the claim less £1 2s. 6d., the sum which should have been realised on re sale, with costs.

ARMY VETERINARY SERVICE

WAR OFFICE, LONDON, S.W.

Extracts from *London Gazette*,

WAR OFFICE, WHITEHALL, Mar. 29.

REGULAR FORCES. ARMY VETERINARY CORPS.

Capt. G. E. Tillyard to be temp. Major whilst in charge of a Vet. Hospital (Feb. 1).

Mar. 30.

Temp. Lieut. W. A. McGill relinquishes his commission (Mar. 18).

April 1.

Temp. Lieut. to be temp. Capt.:—H. Burrell (Mar. 18).
To be temp. Lieut.:—W. L. Little, F.R.C.V.S. (Mar. 20).
To be temp. Qrmr. with hon. rank of Lieut.:—C. G. Kimber (April 1).

Mar. 29.

Capt. F. Walsh, Canadian A.V.C., to be temp. Major whilst Asst. Director of Veterinary Services (Jan 12)

April 4.

Temp. Lieut. to be temp. Capt.:—G. A. Rose (Mar. 10).

April 5.

To be temp. Lieuts.:—D. Wylie (Mar. 23); J. F. Macdonald (Mar. 24).

MEMORANDA.

Col. E. H. Hazelton to be temp. Brig.-General whilst employed as Prin. Vet. Officer in India (April 5).

TERRITORIAL FORCE. ARMY VETERINARY CORPS.

April 5.

To be Lieut.:—J. A. Matheson (April 6).

The following has been mentioned in dispatches from the General Officer commanding for services with the operations in Mesopotamia, from 6th November, 1914, up to 14th April, 1915:—Major W. S. Anthony.

The A.V.C. Comforts Fund.

Dear Sir,—I have pleasure in sending you further lists of subscriptions received and kind contributions sent in parcels.

I am glad to receive any gifts which are sent in to me for our men on active service, but I am advised not to send out further supplies of warm clothing at present—excepting socks, which are always in demand. Mufflers, helmets, mittens, gloves, etc., will be kept over until next season, and I shall be glad to have as large a supply in as possible so that comforts may be sent out early in the winter.

I should like to take this opportunity to again thank all those many kind contributors who have helped us so substantially during the winter.

In the near future I hope that it will be possible to arrange a little meeting of the subscribers to the Army Veterinary Corps Comforts Fund, so that I may have the pleasure of laying a report of the work and balance sheet before them.—Yours truly,

ADELAIDE M. MOORE.

Strathyre, Parsifal Road,
Hampstead, N.W.
April 5th.

Further Contributions received to April 5th:—

	£	s.	d.
Miss Whitaker		10	0
Mr. Arthur Burgon, M.R.C.V.S.	1	1	0
Mrs. George Male, Reading	1	1	0
Mr. Harold Morphew, M.R.C.V.S.	1	0	0
Mrs. Yates		5	0
Mrs. Sam Walker, Colwyn Bay	1	0	0
Mr. James Thomson, M.R.C.V.S., Bervie	2	2	0
Mrs. Lane, Warminster	5	0	0
Major-Gen. F. Smith, C.B.	2	2	0
Mr. Jackson Young, F.R.C.V.S., Northampton	1	0	0
Mr. R. MacGregor, M.R.C.V.S., Mkt. Harboro'	2	2	0
Mr. J. F. Rees, M.R.C.V.S., Carmarthen	1	1	0

per Col. Queripel (from Capt. Tagg, Officers, N.C.Os. and men, Home Counties, Divnl. Vety. Hospital, Aylesford)	5	8	0
per Secretary R.C.V.S. (from Mr. G. W. Sturgess, M.R.C.V.S.; Mr. W. A. De Silva, Messrs. Pate & Sons, Messrs. W. Walles and Co., Mr. T. A. Pate, India & Ceylon)	3	14	0
	£27	6	0

Further Parcels received to April 5th :—

Mr. John Perry, M.R.C.V.S.: Packs of cards
Mrs. Hibbard: Helmets. Miss Melboom: Socks
Mrs. A. N. Garland: Shirts, mufflers, helmet
Mrs. Garnet: Socks, helmets, mufflers
Mr. G. H. Gemmell, F.I.C., F.C.S.: Mits, socks
Mrs. Shipley: Muffler, socks, helmet, mits.
Mrs. A. Cowan: 60 pr. socks (wool supplied)
Mrs. Fearnside: Socks. Mrs. McGowan: Socks
Mrs. Russell: Socks, gloves, mits.
Miss Hinxman: Muffler. Miss Joyce: Cuffs
Mrs. Hamilton: Socks, mufflers, mits.
Mrs. Leckie: Shirts, mufflers, mits., socks
Mrs. Berrie Biddell (per Mrs. Ascott): Waistcoat, mits., socks, helmets, mufflers
Mr. & Mrs. W. G. Kennett: Cigarettes, muffler, books
Mrs. Ecroyd: Magazines, stationery.
Mrs. Clayton: Mufflers, caps, socks
Mrs. Heyland: Socks.

Anglo-Franco-Belgian Veterinary Relief Fund.

The following additional donations are reported :—

Brig.-Gen. J. Moore, Director of Veterinary Services, Headquarters, B.E.F., France	£3	3	0
Mr. J. F. Rees, Carmarthen	2	2	0
Mr. C. W. Wilson, Meerut, India	1	1	0
Mr. C. H. Stephens, Girgaum, Bombay	3	0	0
Veterinary Surgeons in Ceylon :— Mr. G. W. Sturgess, Mr. W. A. De Silva, Messrs. Pate & Son, Messrs. S. W. Walles & Co., Mr. T. A. Pate, Mr. E. T. Hoole	8	17	9
Major T. Bone, A.V.C.	2	0	0
Capt. S. W. Marriott, A.V.C.	2	2	0
Previously reported	101	17	0
Total	£124	2	9

OBITUARY

T. S. Snarry, M.R.C.V.S., Malton, Yorks. Graduated, N. Edin.: Dec., 1889.

Mr. Snarry's death occurred on April 3rd. Aged 49.

Personal.

Collisson—Larnder. On the 21st March, at St. John's Church, Putney (by licence), by the Rev. Canon Williamson, Vicar of St. Margaret's, Ipswich, uncle of the bridegroom, assisted by the Rev. R. T. Gardner, Fulham, Percival Lorimer, eldest son of the late Rev. S. G. Collisson and of Mrs. Collisson, Bristol, to Stella Mary, elder daughter of Lieut.-Colonel E. W. and Mrs. Larnder, St. Mary's House, York.

Donations to R.C.V.S.

The Secretary of the Royal College of Veterinary Surgeons begs to acknowledge the receipt of the following donations for 1916 to the College funds :—

W. J. Boyd, Ledbury, Hereford	£1	1	0
C. W. Cartwright, Capt. A.V.C.	1	1	0
H. Dyer, Blackheath, S.E.	1	1	0
W. W. Grasby, Daventry	1	1	0
E. V. Hobbs, Capt. A.V.C.	1	1	0
T. F. Hogben, Ash, Canterbury	1	1	0
J. Holroyd, Blackburn	1	1	0
A. Lennox, Crowland, Peterborough	1	0	0
D. Marshall, Lieut. A.V.C.	2	2	0
J. C. Munby, Lewes	1	1	0
G. E. Oxspring, Lieut. A.V.C.	1	1	0
J. E. Porrett, Capt. A.V.C.	1	0	0
H. S. Reynolds, Daventry	1	1	0
T. Runciman, Ely, Cambs.	1	1	0
G. R. Simpson, Great Driffield	1	1	0
T. J. Simpson, Ruthin, Denbighsbire	1	1	0
J. Taylor, Edinburgh	1	1	0
J. J. Townsend, Long Stanton, Cambs	1	1	0
Amount previously acknowledged	98	13	0
	£118	10	0
Peter Gillard Bond (conditionally)	5	0	0

Gentlemen,—I agree with the suggestions made by your correspondent "Anonymous," in to-day's issue of *The Record*. We must wake up to hold our positions; don't let us be "too late."

I enclose the amount to qualify my being admitted one of the nineteen.—yours faithfully,

March 25th. P. G. Bond.

CORRESPONDENCE.

NEW MOTOR CAR TAXES.

Sir,—I drive a 20 h.p. two-seater motor car, for which the new tax will be £18 18s. per annum. I am a local Inspector for the Board of Agriculture, and their allowance is 4d. per mile for the above car when engaged upon their work, which they require should be done with the greatest dispatch.

With this new burden of taxation upon us and the high cost of petrol surely the Board must know it is impossible to work on such an allowance.

I trust the Royal College of Veterinary Surgeons and the Council of the Association of Veterinary Inspectors, as well as all individual practitioners, will at once take such steps as appear necessary to call the attention of Parliament, during the debate on the Budget, to the disability under which we are labouring, and demand that we shall be placed in a position of equality with the medical profession in regard to the new taxes as well as the rebate of duties on petrol which we now enjoy. I enclose my card but sign myself,

"Inspector."

5th April.

Sir,—As there are many veterinary surgeons who have motor cars, the increased taxation and also the increased price of petrol will make a considerable difference to our incomes. We are compelled to use them in our profession; it would be impossible for many of us to get our work done satisfactorily unless we had this means of getting about. We must try and get a rebate on this taxation, at least similar to medical men. We should combine, and get our representatives in Parliament to work on our behalf.—Yours faithfully,

T. F. Hall, M.R.C.V.S.

The Priory, Saffron Waldron.
5th April.

Live Stock Insurance—A Newcastle Arbitration.

An arbitration affecting the law of live stock insurance as to uncompleted transfer of policy, was recently heard before Mr. F. W. Dendy, Registrar of the Newcastle County Court, as sole arbitrator. It arose out of a dispute as to the liability under a policy of insurance granted by The County Live Stock Insurance Association, Ltd., to Mr. John Turnbull, late of Lilburn Hill, near Wooler, upon (*inter alia*) a Shire mare against death from disease, accident, or foaling.

Mr. Turnbull gave up his farm of Lilburn Hill at May of last year and held a displenishing sale. In the advertisement of sale and also in the catalogue of horses it was stated that the foaling risks of the mare (which was believed to be in foal) were covered by insurance, and at the sale the auctioneer mentioned that the policy would be handed over to the purchaser.

Mr. Matthew Gibson, Preston Mains, Chathill, bought the mare at the sale, and immediately afterwards Mr. Turnbull's agent handed the policy to Mr. Gibson, who thereupon handed it to Mr. Whittle, the agent of the Insurance Association (who happened to be at the sale), with written instructions to have it transferred to the names of "Matthew Gibson & Son." Mr. Gibson paid the price of the mare to the auctioneer. The sale being on a Saturday, Mr. Gibson made arrangements that the mare should remain at Lilburn Hill until the Monday morning. On the Monday morning, before being sent off, the mare was taken ill, and died on the Tuesday. She proved not to have been in foal. Under the circumstances the Insurance Association claimed that they were not liable under the policy. The case was taken up by the Berwick and Borders' Farmers' Association, and was heard at Newcastle on the 7th Jan. last. Mr. Meynell, instructed by Messrs. Wade & Robertson, of Alnwick, Newcastle, appeared on behalf of Mr. Turnbull and Mr. Gibson, and Mr. Norman Crombie, of Messrs. George Crombie & Sons, of York, appeared on behalf of the County Live Stock Insurance Association.

Mr. Meynell contended that the policy of insurance having been included in the contract of purchase, and having been handed over by the seller to the purchaser, Mr. Turnbull, the seller, as trustee for Mr. Gibson, the purchaser, was entitled to recover under the policy, or that, as such trustee, he was entitled to recover with the concurrence of Mr. Gibson as sole beneficiary.

Mr. Crombie for the Insurance Association contended that Mr. Turnbull could not recover as the policy was one of indemnity, and he having sold the mare and been paid for it, had suffered no loss, and that Mr. Gibson could not recover as the policy had not been transferred to him. He also contended that the policy following on the proposal was void because it was based on a material misrepresentation of fact as to the age of the mare, and in support pointed out that whilst in the proposal and policy the age was stated to be nine (which would make the age ten at the time of the sale) the catalogue gave the age as eleven.

The arbiter in his award has found that it was intended by the parties to the contract of sale and purchase of the said mare that the benefit of the policy should be included therewith. In dealing with the question of misrepresentation of fact, he states that no oral evidence or other proof of misrepresentation (other than the statement of age in the proposal—policy and catalogue) was advanced before him on behalf of the Insurance Association, and on the other hand the oral evidence given on behalf of Mr. Turnbull and Mr. Gibson showed that the said mare's age was ten, which was the age mentioned in the policy, and he found as a fact that there was no material misrepresentation by Mr. Turnbull at the time the policy was issued.

Dealing with the question of law, he found in favour of the contention of Mr. Meynell on behalf of Mr. Turnbull and Mr. Gibson, and against the contention of the County Live Stock Association, Ltd., and he directed the Association to pay to Mr. Turnbull and Mr. Gibson the sum of £60 (the amount for which the mare was insured) to be applied by them as between themselves in accordance with the rights and equities affecting the same.

Observations on the Etiology of Sarcoma in the Rat,

by Albert S. Leyton, M.D., Cantab., Professor of Pathology, University of Leeds, and Helen G. Leyton, M.D., Birm. (From the Department of Pathology of the University of Leeds.)

Some previous work on the hæmolytic properties of the serum of rats inoculated with sarcoma showed us that these properties were to be found also in diseases of bacterial origin, and thus suggested an investigation into the possibility of a bacterial origin for sarcoma.

Adopting the hypothesis mentioned, we argued that the site of infection would probably be the cell nucleus, since most of the characteristics of malignant growth point to irritation of the nucleus. It appeared probable that the organism in question would be of very small size if it were to reach and penetrate the nucleus. Based on these two points, a series of experiments was carried out as follows:—

Rat sarcoma, after an immersion for 20 seconds in boiling water, was finely minced with the object of breaking up some of the nuclei, and the minced tumour made into an emulsion with saline solution. The emulsion was filtered through a Chamberland filter (B or F). The filtrate was plated out in the ordinary way on glucose glycerine agar and a streptothrix isolated in several cases. In similar fashion we have also isolated but not yet investigated a streptothrix from mouse carcinoma.

It seemed unlikely that a streptothrix, as such, would be a filter passer, but as they form spores it was conceivable that passage through the filter had taken place in this condition. As a spore, too, it might more easily enter the cell nucleus and also reproduce the streptothrix, either directly or through an alternate generation. If this supposition were correct, the virus of the new growth should be found in the filtrate, and a corroboration of this hypothesis was obtained when, in the summer of last year, three rats, which had been repeatedly injected in the axilla with 1 c.c. each of sarcoma filtrate, developed tumours at the site of inoculation. It is, of course, well known that several sarcomata have a filterable virus, but we are not aware that it has been mentioned in connexion with the Ehrlich rat sarcoma. The first tumour noticed was of much slower growth than the original strain, but when inoculated into 18 rats it grew in four of them just like the original spindle-cell sarcoma, which it then resembled in all respects except in the number of "takes," which at that time was about 90 per cent.

In order to test the relationship of the streptothrix to the formation of sarcoma, it was injected several times into the subcutaneous tissue and into the peritoneal cavity of rats, and several were also fed with it weekly for some time. So far, the tumor has resulted in one of the fed rats only. In the mediastinum was a growth about the size of a cherry, together with several smaller ones. It has all the characters of a spindle-cell sarcoma and is inoculable. From it the streptothrix has again been isolated.

The streptothrix in question appears to be either very pleomorphic or several species are to be found in rat sarcoma. We have also isolated one by the same method from the washings of the hair of a sarcomatous rat, but not, so far, from that of a normal rat. Having

regard to the precautions of technique, etc., against the possibility of error, we feel constrained to abandon the scepticism with which we approached the inquiry and to record the results so far attained. The paucity of positive results we look upon as corroborative rather than otherwise, since obviously all rats will not possess the intrinsic factor as well as the extrinsic (streptothrix) necessary for the formation of new growth.

In connexion with this "nuclear" hypothesis, we may mention that by the use of certain substances having direct nuclear affinity, which were kindly given to us by Prof. A. G. Green, of the Tinctorial Chemistry Department of the University of Leeds, it is possible to compass the destruction and effect the cure of subcutaneous inoculated rat sarcoma. The tumour shrivels up into a hard mass and in time separates as a scab.—*The Lancet.*

Breeders and the Tuberculin Test.

The following remarks occur in a comment on the action of the Argentine exporters, which appears in *The Scottish Farmer* of April 1st:—

"The Tuberculin Test has been demonstrated in many lands to be as reliable as anything human can be, when it is honestly and efficiently applied. The breeders of Shorthorn cattle are not the only wise people in the cattle-breeding world. In many parts of the globe the tuberculin test has been the instrument whereby tuberculosis has been controlled, and finally eradicated. It is admitted that even the extremely partial adoption of Bang's system, which consists of separating the calf at birth from its dam, has resulted in a much higher percentage of bull calves being sound than used to be the case. There is no mystery about this. Nocard long ago gave evidence and facts to prove that it was so. Observant men have seen facts in families of men and women which told the same tale. Yet for nearly twenty years the leading breeders of Great Britain and Ireland have hugged the delusion that the tuberculin test is unreliable; that Bang's system, or its modification, is of no use; that, in fact, the white scourge which has wrought such havoc in the human family may be treated with indifference in the bovine race. Such folly comes home to roost. The Argentine exporters are the best buyers of British cattle. It is the high prices which they are prepared to give which maintain averages at their high level. As they pay the piper, they have resolved to call the tune."

Inoculation for Epizootic Abortion in Devon.

At Totnes Mr. F. V. Dutton, the Devon County Agricultural Organizer, told the Wrangaton and Totnes Branch of the Devon Farmers' Union that the County Council had recently taken up the treatment of epizootic abortion by the new method of inoculation, and on the previous day 17 South Devon cows were treated with the bacillus. The vaccine would be supplied free to the farmers, but they would have to pay the veterinary surgeon's fee. It had been tried on a large scale in Cornwall and Oxfordshire, and with most of the animals treated the anti-abortion vaccine had been a success. They must not treat any animal in calf with it, and they should not be sent to the bull for two months after inoculation. It has been so successful as to warrant the Board of Agriculture in recommending it to the Devon County Council.

DISEASES OF ANIMALS ACTS 1894 TO 1914, SUMMARY OF RETURNS.

Period.	Anthrax		Foot-and-Mouth Disease.		Glanders.†		Parasitic Mange. ‡		Sheep Scab.	Swine Fever.	
	Out-breaks (a)	Animals.	Out-breaks (a)	Animals.	Out-breaks (b)	Animals.	Out-breaks (b)	Animals.	(b)	Out-breaks (a)	Slaughtered. *
GT. BRITAIN. Week ended April 1	13	15			1	1	52	101	4	86	235
Corresponding week in 1915 ...	12	19			2	3	‡68	‡143	2	57	222
Corresponding week in 1914 ...	22	23			2	2	38	52	4	74	853
Corresponding week in 1913 ...	11	11			3	29	63	122	3	38	541
Total for 14 weeks, 1916	181	208	1	24	20	61	1063	2608	153	1164	3611
Corresponding period in 1915 ...	220	247			9	14	‡ 68	‡143	136	1004	4150
Corresponding period in 1914 ...	265	284	11	74	28	72	983	1816	138	855	8131
Corresponding period in 1913 ...	185	202			49	165	1079	2270	108	505	6360

‡ The Parasitic Mange Order of 1911 was suspended from 6th August, 1914, to 27th March, 1915, inclusive.

(a) Confirmed. (b) Reported by Local Authorities.

† Counties affected, animals attacked:—Hertford 1.

Board of Agriculture and Fisheries, April 4, 1916.

Excluding outbreaks in army horses.

IRELAND. Week ended April 1	...	...	...	...	...	...	Outbreaks 4	12	18	97
Corresponding Week in 1915 ...	...	...	...	...	...	...	...	5	4	23
Corresponding Week in 1914 ...	...	...	10	96	...	...	5	8	10	15
Corresponding Week in 1913 ...	...	...	...	...	...	...	2	10	2	26
Total for 14 weeks, 1916 ...	1	5	...	...	...	...	26	184	77	391
Corresponding period in 1915 ...	1	1	...	...	...	...	13	180	69	430
Corresponding period in 1914 ...	...	...	52	804	...	...	34	296	71	332
Corresponding period in 1913 ...	...	...	...	...	...	...	75	290	40	232

Department of Agriculture and Technical Instruction for Ireland, (Veterinary Branch), Dublin, April 3, 1916.

NOTE.—The figures for the Current Year are approximate only.

* As diseased or Exposed to Infection